Removing CCFL from iMac 20in LCD CCFL assembly

CCFL removal procedure.

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INTRODUCTION

This guide will show you how to remove the CCFL tubes from the CCFL assembly.

TOOLS:

- Heavy-Duty Suction Cups (Pair) (1)
- Metal Spudger (1)
- Phillips #00 Screwdriver (1)
- Phillips #1 Screwdriver (1)
- iFixit Opening Tools (1)
- Flathead 3/32" or 2.5 mm Screwdriver (1)
- Solder (1)
- Soldering Station (1)
- Spudger (1)
- T6 Torx Screwdriver (1)
- T8 Torx Screwdriver (1)

PARTS:

- CCFL - 446mm x 2.4mm (1)

Step 1 — Access Door



- Loosen the single Phillips screw in the center of the access door.
- This screw is captive in the access door.
- Remove the access door from your iMac.

Step 2 — Glass Panel





- The glass panel is fixed onto the front bezel with fourteen magnets around its perimeter.
- Stick two suction cups to opposing corners of the glass panel.
- To attach the suction cups we sell, first position the suction cup with the movable handle parallel to the face of the glass panel. While lightly holding the suction cup against the glass, raise the movable handle until it is parallel with the other handle.
- If your suction cups refuse to stick, try cleaning both the glass panel and the suction cup with a mild solvent such as Windex.

Step 3



- Gently pull the glass panel straight up off the iMac.

⚠ The glass panel has several positioning pins around its perimeter. To avoid shearing these pins off the glass panel, be sure to only pull straight up during removal.

📌 Be meticulous about cleaning the LCD and the inside face of the glass panel before reinstallation, as any fingerprints or dust trapped inside will be annoyingly visible when the display is on. Placing the glass flat, inside face down, on a fresh aluminum-foil surface is a good way to keep it clean.

Step 4 — Front Bezel



- Remove the following 12 screws securing the front bezel to the rear case:
  - Eight 13 mm T8 Torx.
  - Four 25 mm T8 Torx.

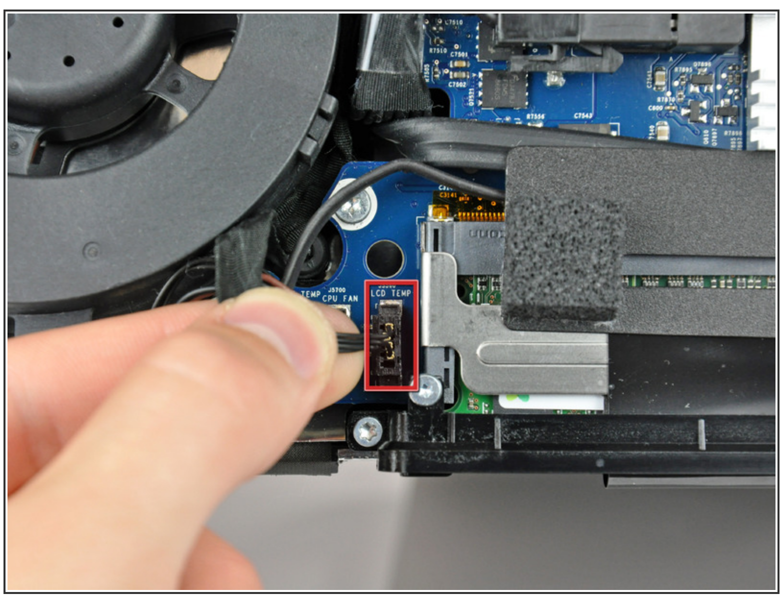
Step 5

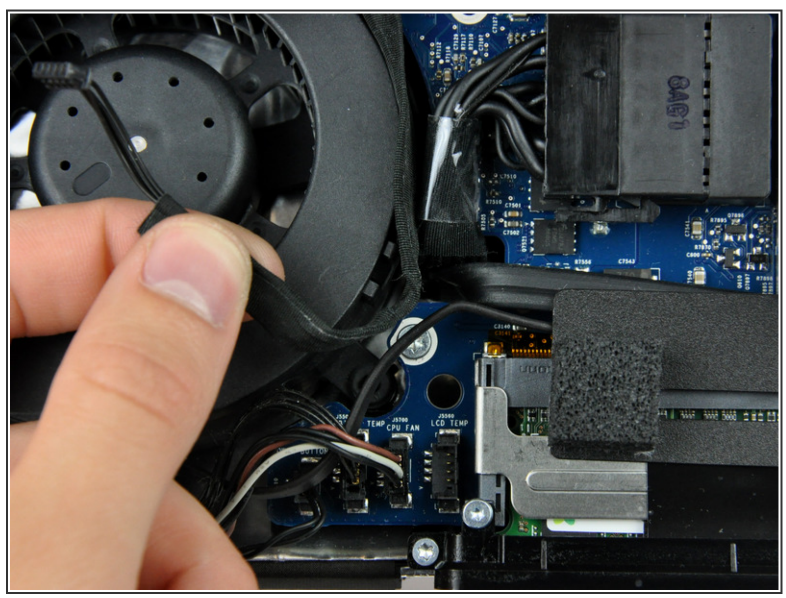


- Disconnect the microphone cable connector, removing tape as necessary.

For the front bezel to sit properly, be sure to tuck the microphone cable and connector into the void next to the camera board.

Step 6 — Display Panel

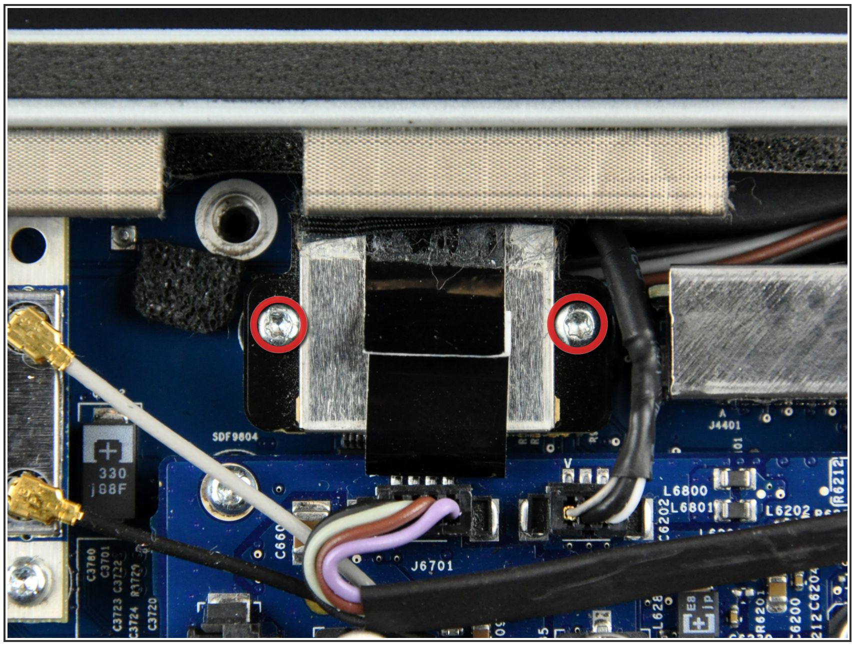




- Pull the LCD temperature sensor connector straight up out of its socket on the logic board.
- If necessary, de-route the LCD temperature sensor cable from behind the logic board.

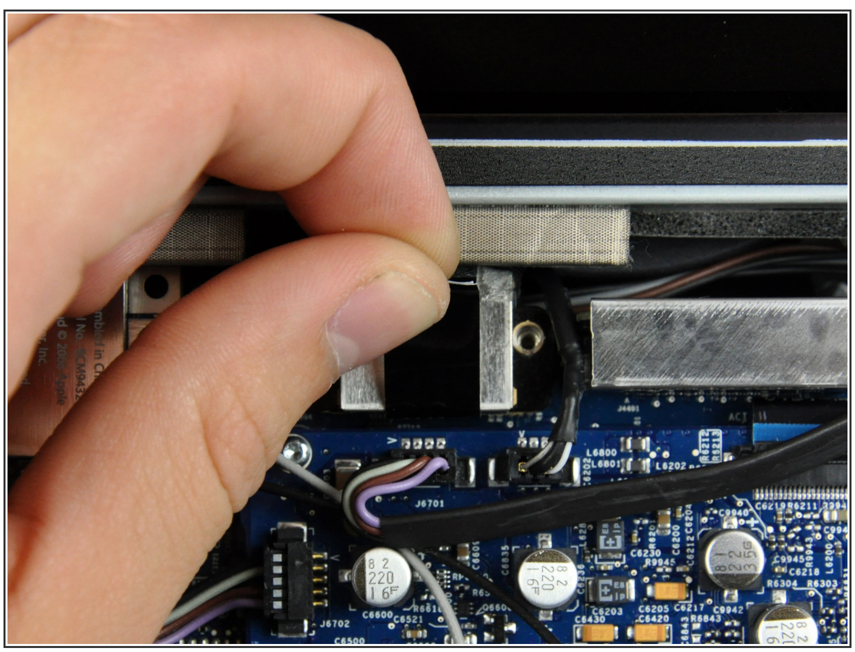
When you remove the LCD, check the routing of the LCD temperature display cable. On reinstalling the display, be sure this cable does not block one of the bottom screws for the front bezel.

Step 7



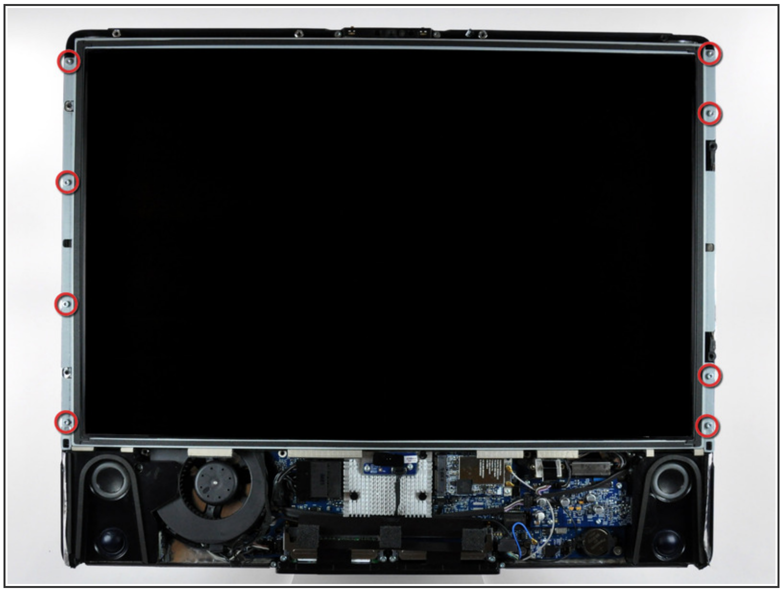
- Remove the two 5.3 mm T6 Torx screws securing the data display cable to the logic board.

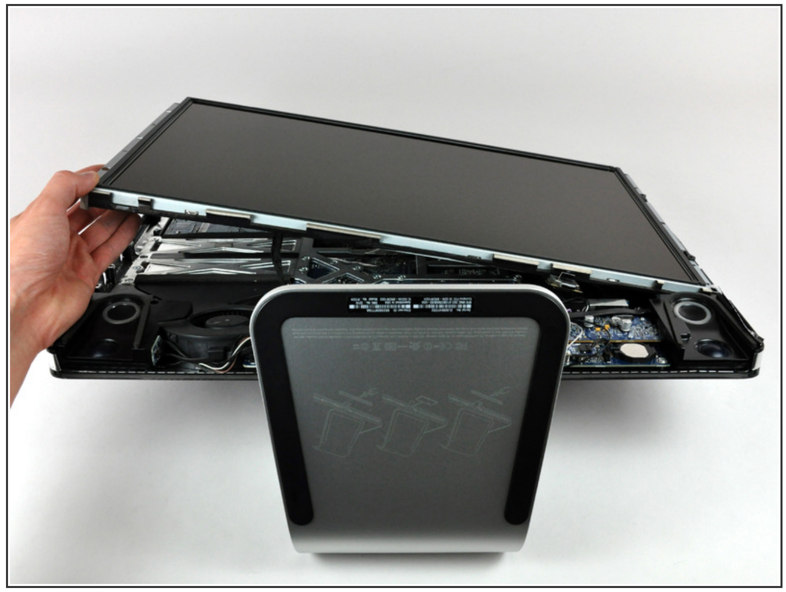
Step 8



- Use the attached black tab to pull the data display cable connector away from the logic board.

Step 9

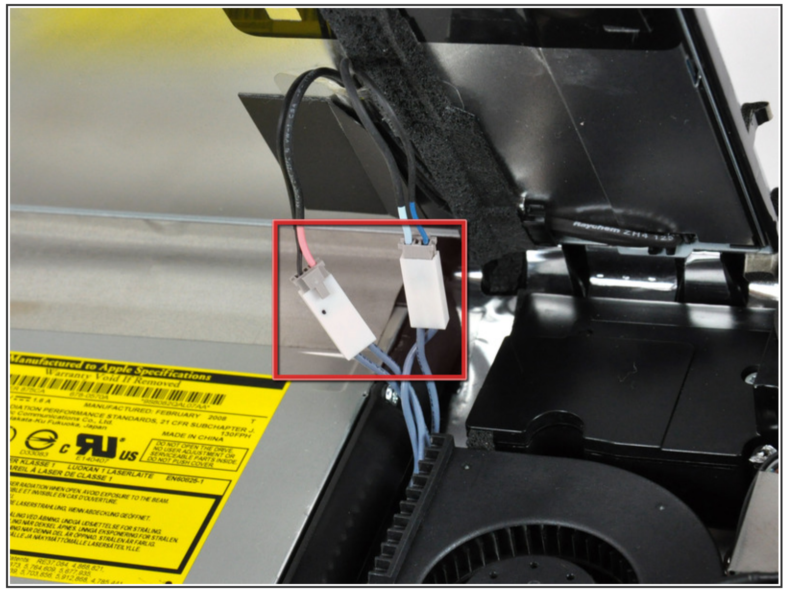




- Remove the eight 12 mm T8 Torx screws securing the display panel to the rear case.
- Lift the display panel from its left edge and rotate it toward the right edge of the iMac.

Step 10





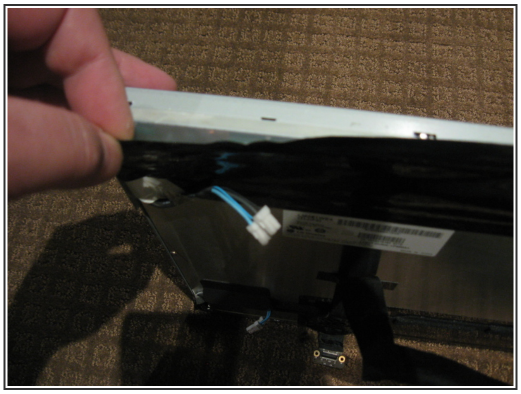
- With the display panel still lifted, disconnect the four inverter cables.

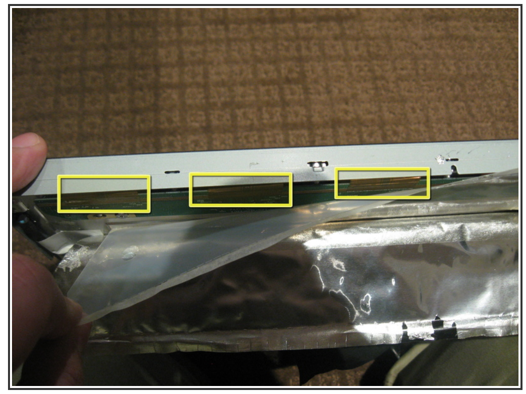
- During reinstallation, place the four inverter cable connectors in voids between components attached to the rear panel so the display panel will sit flush.

- During reassembly, the order of the inverter cables is interchangeable within each socket.

- If you are replacing a hard drive and have an extra set of hands, it is possible to reach in and remove the drive without disconnecting anything but the LCD temp and display connector in the previous step with the LCD in its propped position.

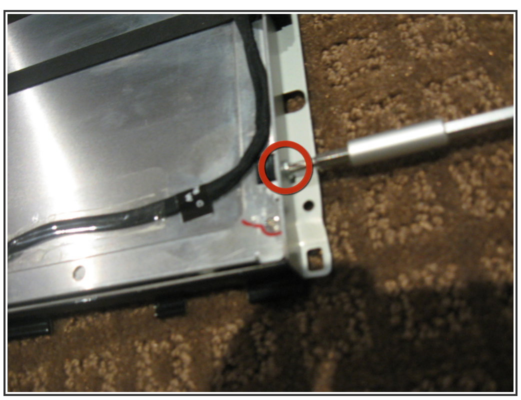
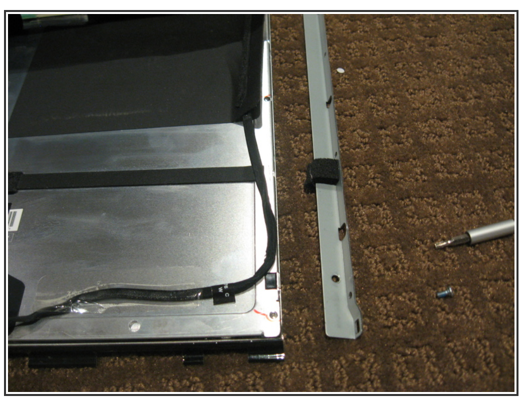
Step 11 — LCD Backlights (CCFL)





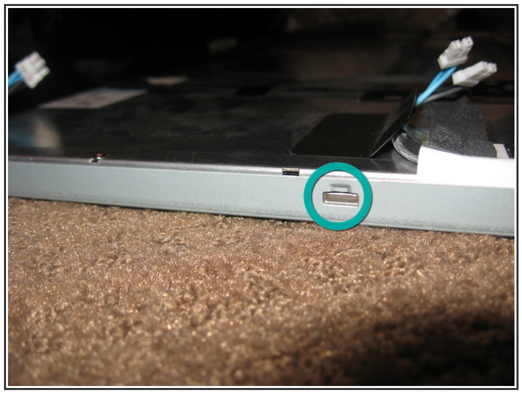
- The rest of this procedure should be done in the cleanest possible work environment to avoid dust getting **BEHIND** the LCD (I learned this the HARD way!)
- Once the LCD panel is removed you need to peel back the black foil from the top edge of the LCD to reveal the clear plastic PCB protector.
- Now gently peel the clear plastic PCB protector off the top edge. Make sure you don't damage the flex cables attached to the PBC you are exposing.
- There are a total of 8 flex cables along the top edge

Step 12


- Use a sharpie or similar, mark the side brackets on either side of the LCD panel before removing screws as they are different
- Use a T10 Torx driver to remove the 2 screws from each side bracket (total 4 screws)

Step 13


- Stand the LCD panel on its TOP edge and locate the lock tabs along the BOTTOM edge. There are 5 along the length of the bottom edge
- Use a flat blade driver or metal spudger to Gently pop the bezel off the lock tabs.
- Locate the lock tabs on either side of the LCD panel. There are 2 on each side
- Use a flat blade driver or metal spudger to Gently pop the bezel off the side lock tabs.

Step 14

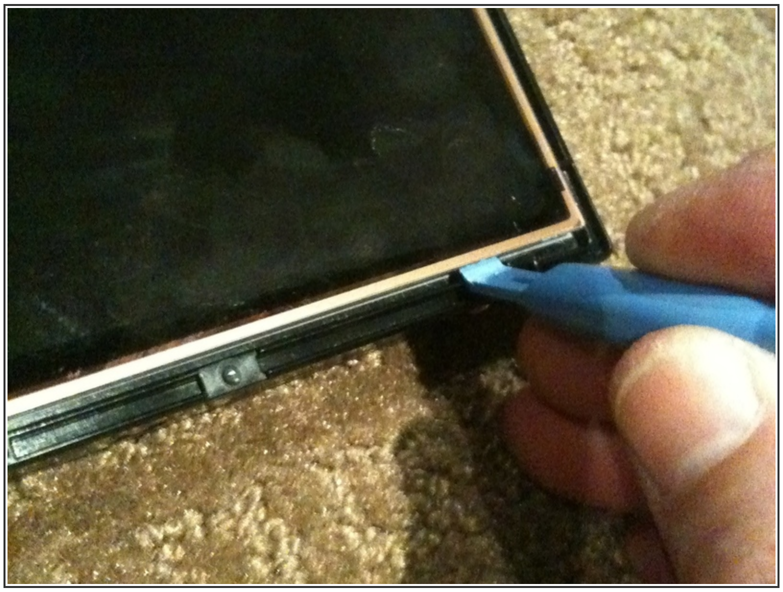


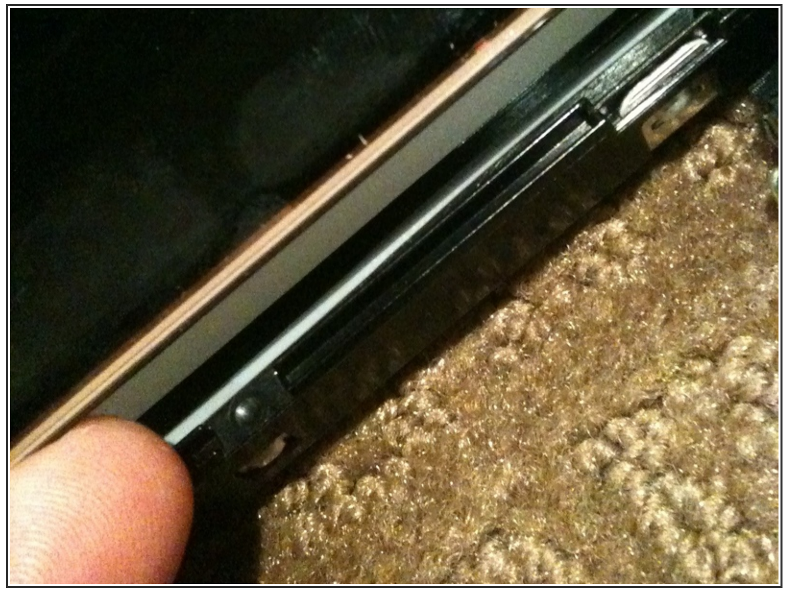




- Now gently separate the metal bezel from the main body of the LCD panel
- Lay the LCD panel down on with viewing side UP and remove the metal bezel
- ⚠ Make sure you are careful when removing the bezel from the TOP edge as you will be exposing the 8 flex cables mentioned in step 1.
- Note the 3 flex tabs on the left edge
- ⚠ Do not damage any of the tabs or flex cables as these are the Row and Column Drivers. Damage to these will will cause faults like vertical/horizontal lines or white screen etc.
- ⚠ **WARNING** - Once the bezel is removed the LCD is LOOSE in the black plastic frame - only held in by the small gasket underneath.

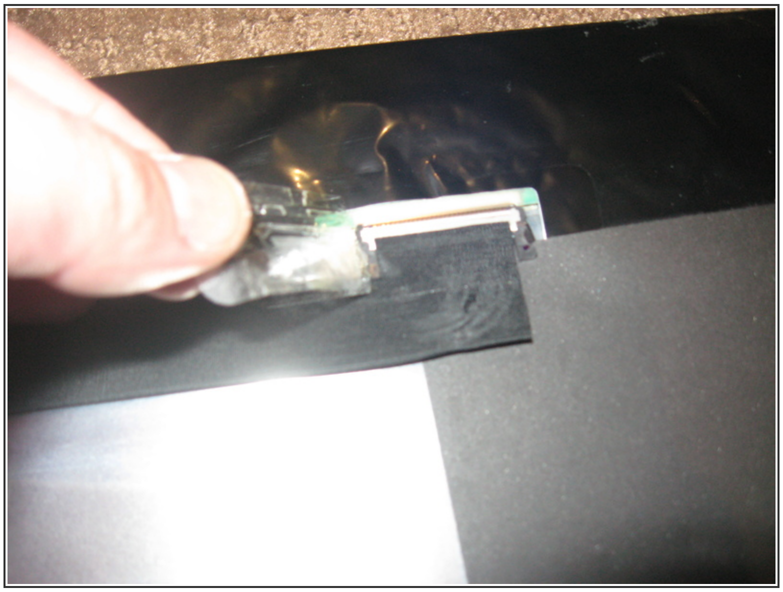
Step 15

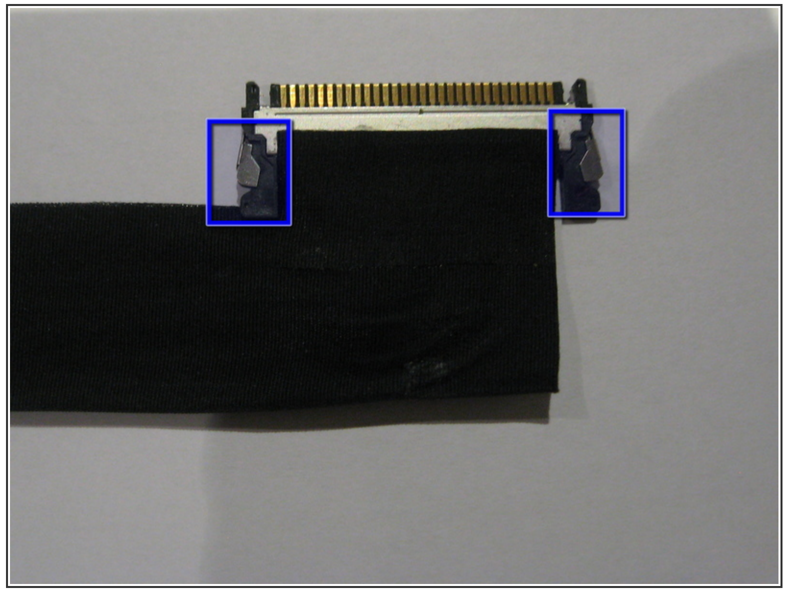




- Using a plastic spudger or pry tool, work **GENTLY** around the edges of the LCD to loosen it from the gasket below - use **GREAT CARE** so you don't crack or chip the panel as it is only a couple mm thick
- Once the LCD is loose you need to HOLD it in place in the black plastic frame and **GENTLY** flip the entire assembly so the LCD is flat on the work surface

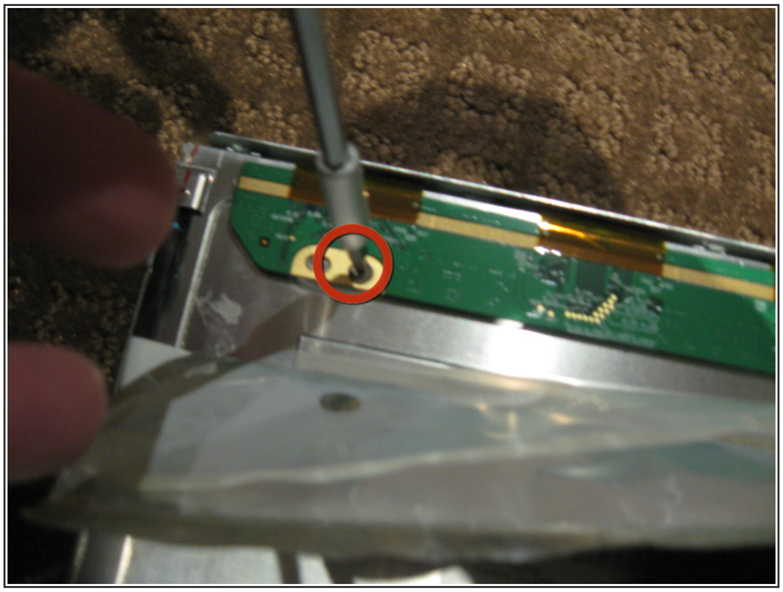
Step 16

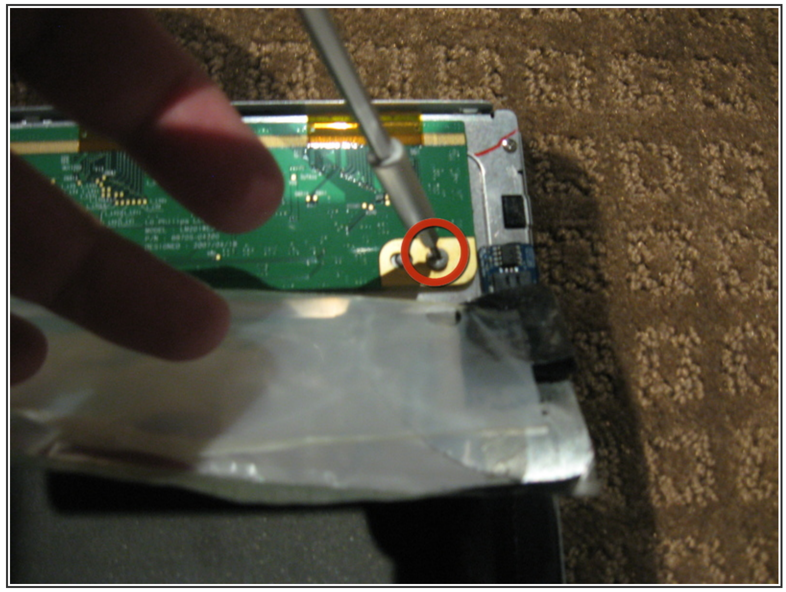




- Remove the tape securing the LVDS cable
- Press **IN** the 2 silver spring loaded catches on either side to release the cable and gently extract it from the connector

Step 17





- Peel the back Black foil and clear plastic PCB protector to fully expose the PCB that runs across the top of the LCD assembly
- Remove the 2ea Philips head screws from each end of the PCB
- The PCB actually has a 3rd screw hole in the centre of the board. Perhaps my assembly is missing a screw

Step 18





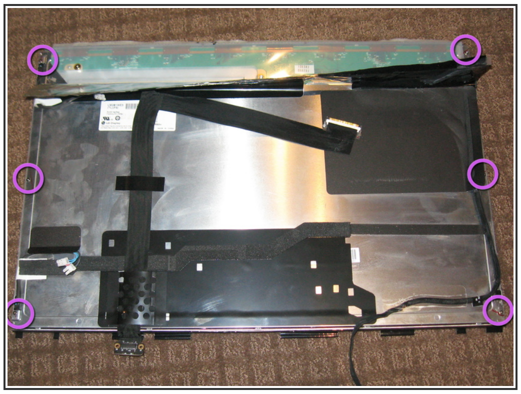
- Gently flip the PCB over 180deg so it is off the aluminum back panel.

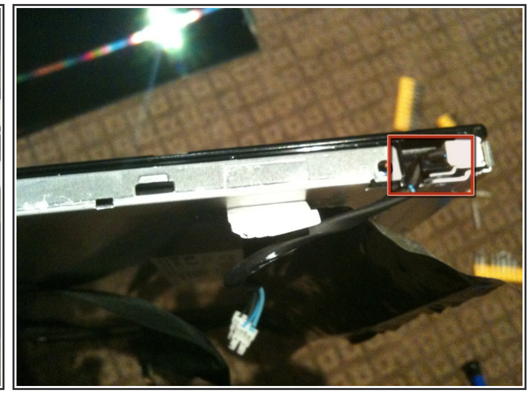
⚠ Be **CAREFUL** not to damage the 8 flex cables

ⓘ The PCB may be attached to the aluminium by some adhesive near the LVDS connector. IF so use a plastic pry tool or spudger to **GENTLY** lift the PCB up

- Now lift the the back panel off the LCD separating the LCD from the back light assembly

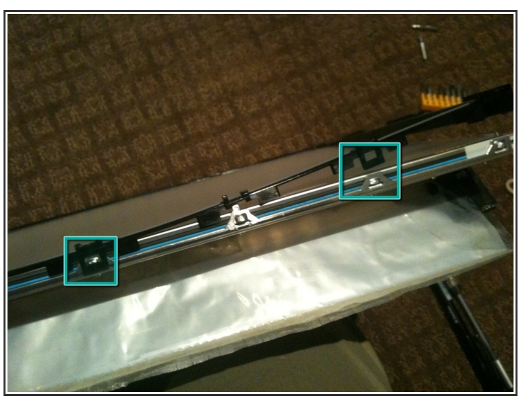
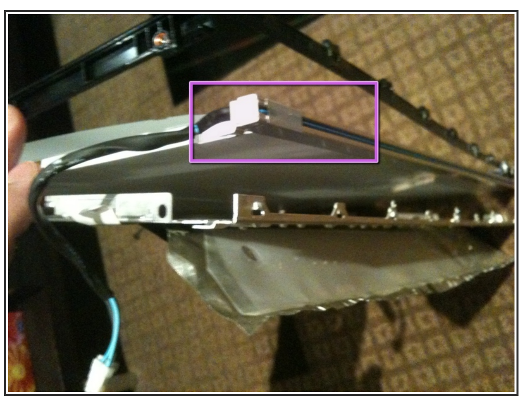
Step 19





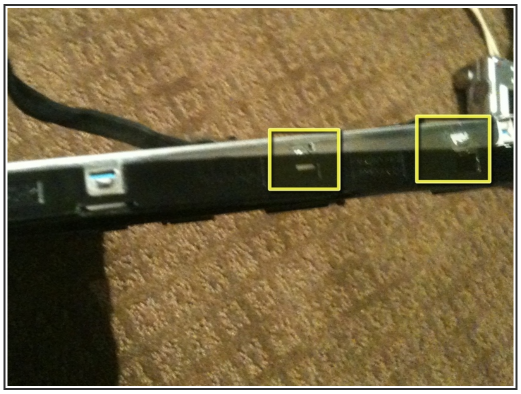
- Disassembling the back-light assembly is a little fiddly as there are a number of parts that all want to come apart at the same time
- Remove the 6 Philips screws from the rear of the back light assembly
- Removing the white tape from the CCFL cable.
- Un-clip the CCFL cable from the black plastic surround
- There are 2 CCFL cables and the process is essentially the same for each

Step 20


- Separate the black plastic surround from the aluminum back plate to access the CCFL tube assemblies
- Start by un-clipping the tabs along the top edge of the assembly. There are 4 tabs along the top
- The top CCFL tube can be seen and **CAREFULLY** removed

Step 21





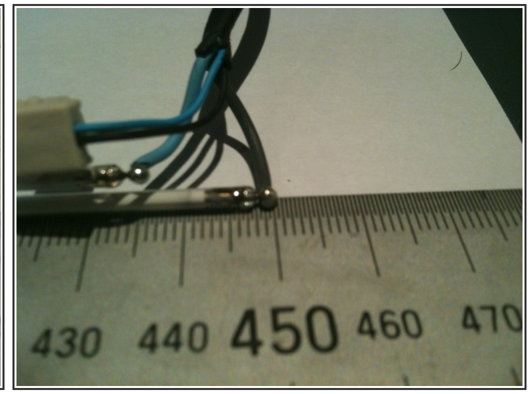


- The bottom of the black surround can now be un-clipped and the entire surround removed
- There are 4 tabs along the bottom of the assembly
- Once the black surround is off the rest pretty much comes apart with the bottom CCFL tube being able to be removed in a similar manner to the top
- The centre of the back light assembly is made up of 4 main parts. A perspex sheet with white plastic coating, 2 opaque matt plastic sheets, and 1 Pearlescent matt plastic sheet
- The plastic sheets are polarisers so need to be kept clean and free of dust and scratches

Step 22

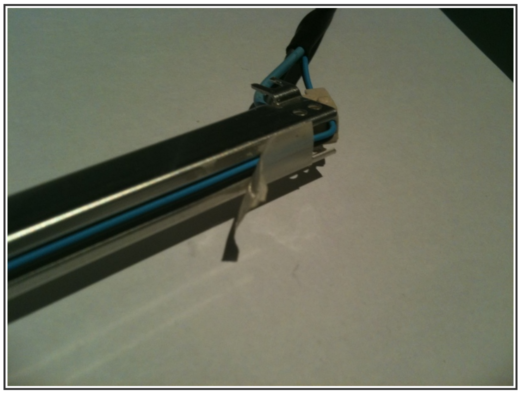
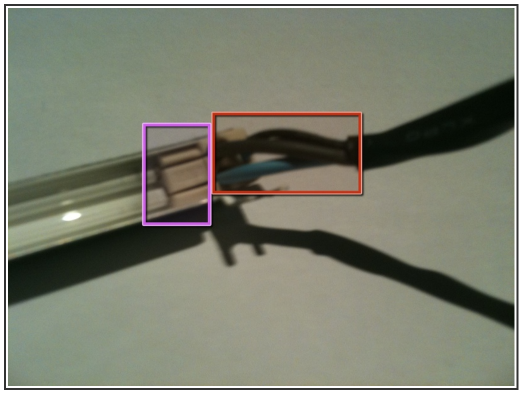
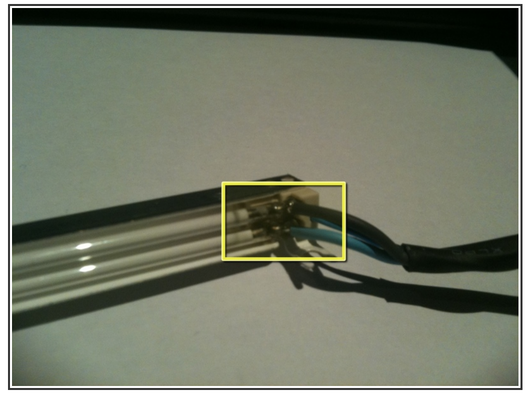






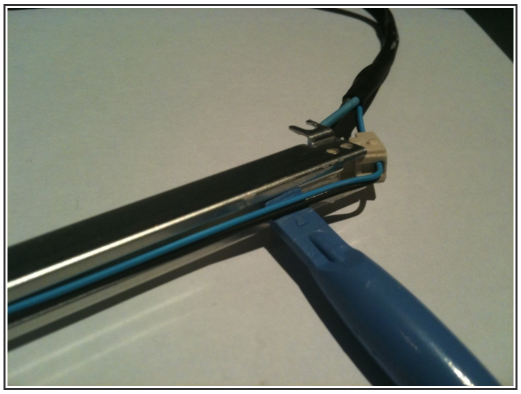
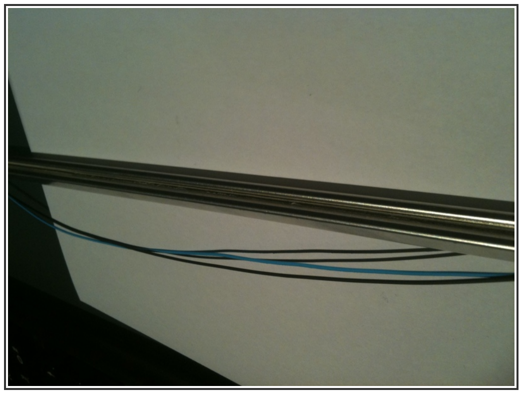
- The CCLF tube assemblies are made up of a U shaped reflector with 2ea individual tubes inside. The entire assembly is 457mm long and 7.6mm wide. There are no part numbers on the assembly however there is a S on the end with the wires attached and an 18 on the other end.
- The 2 CCFL tubes are held together with a figure 8 rubber band in the middle of the reflector so both tubes must come out at the same time.
- The individual tubes are 448mm long (excluding the terminals - standard way to measure is end of glass to end of glass) and are 2.4mm diameter.
- The CCFL are soldered to the wires so not a simple plug in replacement
- The CCFL are **EXTREMELY** fragile so ensure you dont break them when installing them.
- The CCFL reflectors are a tight fit over the sides of the perspex sheet and the other layers of plastic. Patience and a plastic spudger or pry tool should get you there
- The closest I can find to my CCFL measurements are either the 446mm x 2.4mm or the 450mm x 2.4mm so I'd suggest the 446mm is used
- See the Removing CCFL from iMac 20in LCD CCFL assembly guide for details

Step 23 — CCFL assembly

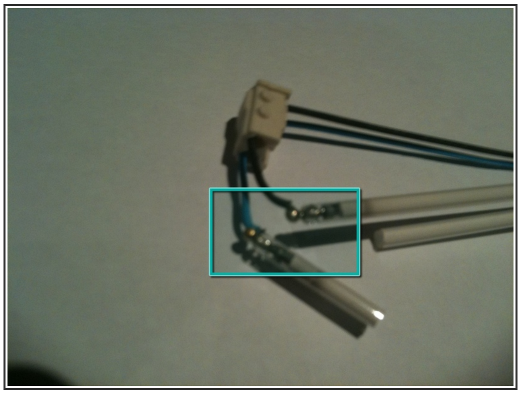
- Remove the white tape from either end of the rear of the CCFL assembly.
- Carefully remove about 15-20mm of heat shrink from the CCFL cable to allow the end cap to be removed, making sure you **DO NOT** cut or nick the wire insulation.
- ⚠ The wires have a **HIGH VOLTAGE** applied during operation and the insulation may break down if damaged causing a short
- While holding the assembly, slowly and gently pull the **THICK** wires up and out of the slots in the white rubber cap.
- ⚠ Pull the wires one at a time ensuring you don't flex the CCFL and break it.
- This will reveal the pins and solder joints.

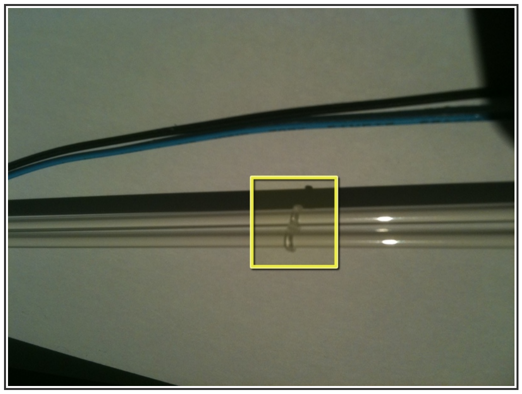
Step 24

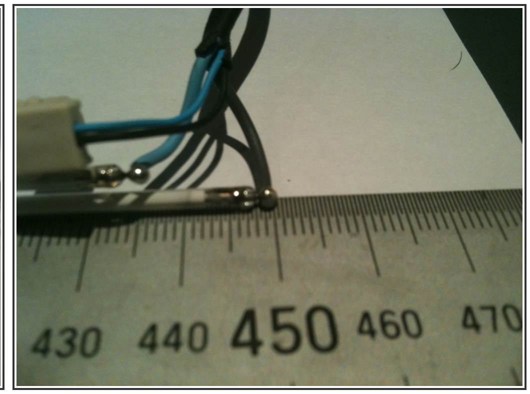




- Gently push the **THIN** wires through the rubber end cap to create a bit of a loop on the rear of the assembly.
- Using a plastic pry tool you can pop the rubber end cap out and then lift the thin wires out of the groove in the rear of the CCFL assembly
- Note the thin wires are held in the groove by a small amount of adhesive.
- Run the pry tool the length of the assembly and free the wires all the way to the other end cap
- gently pop the rubber end cap out of the assembly

Step 25







- Gently pull the rubber end cap off the CCFL to expose the pins and solder joints
- ⚠ The CCFL are **FRAGILE** and will easily break
- Now its a simple task of un-soldering each wire and soldering in the new CCFL
- There is a little figure 8 rubber band tying the 2 CCFL together at their centre.

To reassemble your device, follow these instructions in reverse order.

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